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ABSTRACT

This presentation is an informal discussion of a questionnaire context effect which led to an erroneous conclusion in analysis of data from the Monitoring the Future project; an annual survey of high school seniors that has occurred since 1975, and that focuses heavily on their drug use and attitudes about drugs. In 1980, the researchers reported distinct shifts in peer norms about the regular use of cigarettes, alcohol, or marijuana. Anomalous trends in subsequent years, however, revealed that this shift was due primarily to the placement of the questions about friends' disapproval immediately after the questions about parents' disapproval. A revised format, omitting the parent questions, revealed that the supposed shift in peer norms about drug use was a contextual effect of the placement of peer approval questions after parent approval questions. The paper concludes with speculations about how the context effect can influence or distort correlation findings. The presentation includes references along with seven visual displays of data. (TE)

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Friends May Disapprove of Drug Use, but Not as Much as Parents Do: Another Lesson in Questionnaire Context Effects

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Some of you may recall that one of the suggested theme topics in this year's call for papers was "Learning from our mistakes: a compendium of embarrassing but educational events in survey research." Some may also recall Phil Meyer's comment in the recent AAPOR Newsletter that only one member responded to that invitation--hardly sufficient for a compendium. Phil concluded that I must be the only AAPOR member who had made such a mistake, or at least the only one willing to talk about it.

I guess Phil felt that such virtue should not go unpunished, so he invited me to present the paper as part of a session on context effects in questionnaire design, and scheduled me for 9 a.m. Saturday morning!

Our lesson in questionnaire context effects was, in fact, an instructive mistake. However, I thought it would have a much nicer ring if I presented it as an instance of serendipity. But then I reviewed the dictionary definition of serendipity: "the gift of finding valuable or agreeable things not sought for." The literature (e.g., Schuman & Presser, 1981; Turner, 1984) suggests that indeed most survey context effects have been discovered accidentally; however, I feel confident that many of these discoveries were not viewed as "agreeable things." Indeed, Turner's (1984) chapter dealing with such effects is subtitled, "Some preliminary hypotheses and some disagreeable examples."

In any event, some years ago my colleagues and I (I'm happy to share the blame) inadvertently generated a somewhat uncontrolled experiment, which wound up demonstrating a particular sort of questionnaire context effect. We did not find the discovery agreeable, but it has been instructive--and thus valuable.

I think the most interesting way to introduce our findings is to give you a brief history. I'll first show you the initial manifestations of the effect, and how we thought we had uncovered an important shift in attitudes (that's the most embarrassing part). Then I'll show you how an additional year's worth of data led us to realize something was wrong, and what we decided to do about it. After that we can take a closer look at the context effect and try to draw a few lessons from the whole experience.

For more than a decade, Lloyd Johnston, Patrick O'Malley, and I have been surveying high school seniors, focusing heavily on their drug use and attitudes about drugs. A good deal of information about the study is available elsewhere (e.g., Bachman & Johnston, 1978; Johnston, O'Malley, & Bachman, 1986; Bachman, Johnston, & O'Malley, 1987; further citations are available from the author). For present purposes we need note only a few characteristics of the study design. Each year since 1975 we have surveyed approximately 17,000 seniors in about 135 high schools throughout the coterminous United States. We use machine-readable questionnaires, administered in classrooms by members of the Survey Research Center's field interviewing staff. Actually, five different questionnaire forms are used each year; we do this in order to broaden our coverage in general, but especially because we want to cover a wide variety

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of drug-related matters while limiting the burden on respondents. This means that most of our measures, including those which are the focus of this paper, are administered to samples of about 3,400 seniors annually. I should add that a core set of questions concerning drug use and demographic material appears in all five questionnaire forms, thus providing a higher degree of accuracy and also permitting correlational analyses with measures in all five questionnaire forms.

In 1980, the sixth year of the study, we reported distinct shifts in peer norms about the regular use of cigarettes, alcohol, or marijuana. In that year there was a jump upward in the percentages of seniors who reported that if they were to use these drugs regularly, their friends would disapprove or strongly disapprove. The set of questionnaire items which led to this conclusion is shown in Figure 1, and most of the trend findings are shown in Figures 2 and 3.

Note that Figures 2 and 3 display not only perceptions of friends' disapproval, but also perceptions of parents' disapproval as well as the seniors' own disapproval of the behaviors in question. Those other attitudes play an important part in our story, but we will concentrate primarily on perceptions of friends' views. Another passing comment about Figures 2 and 3 is that the questions about friends were not included in the 1976 and 1978 surveys, because our initial notion was that measurement every other year would be sufficient for these variables. However, by 1979 we felt that the questions about friends were important enough to be included each year; on the other hand, we felt that the questions about parents did not bear frequent repetition, because practically all seniors indicated that their parents would disapprove of just about any form of drug use.

Turning first to the data on marijuana (Figure 2), it seemed that in 1980 peer disapproval was starting to rise. We noted especially the shift upward in disapproval of regular marijuana use (a rise of 6 percent), but we also noted that this somewhat parallelled the rise in seniors' reports of their own disapproval of such use. In other words, the findings in Figure 2 seemed pretty consistent--and also very interesting, since they marked the early stages of what could later be seen as a slowly growing disaffection with marijuana among young people.

The data for cigarette smoking (Figure 3) indicated a more dramatic shift in peer norms, and one which contrasted with the much more modest rise in seniors' own disapproval. We offered the following interpretation in 1980: "...the fact that the shift in peer norms has been much larger than any change in personal disapproval ratings suggests that a convergence with reality--a reduction of pluralistic ignorance--accounts for most of the rise in their perceptions that friends would disapprove pack-a-day smoking" (Johnston, Bachman, & O'Malley, 1980a, p. 97). In retrospect, it appears that the "convergence" occurred because in 1980 for the first time we had removed a context effect which had been distorting some seniors' ratings of friends' disapproval. But I'm getting ahead of my story.

Turning next to the data for drinking (also in Figure 3), we see a somewhat different pattern. We offered the following commentary in 1980: "Alcohol represents the one other drug on which there had been some discrepancy between the seniors' own attitudes and what they perceived to be those of their close friends--a discrepancy which for the first time this year narrowed substantially" (Johnston et al., 1980a, p. 97). Again, with the dazzling clarity of hindsight, it appears that the discrepancy narrowed for the first time in 1980 because we changed the context in which we asked about friends' disapproval.

I'll tell you about the change in context in just a moment, but first let me show you what made it clear to us that something was strange about the changes from 1979 to 1980. It was when we looked at the data for 1981 that we became suspicious. In Figure 4 we see the trend data for marijuana attitudes, extended through 1981. These findings seemed fairly reasonable to us; both personal and peer disapproval continued to rise. But the trends through 1981 for alcohol, and to some extent those for cigarettes, both shown in Figure 5, seemed strange. The 1979 to 1980 shift in peer disapproval was limited to just that one-year interval; moreover, it had

no counterpart in personal disapproval--the seniors' own views about alcohol were virtually flat, except that disapproval of heavy weekend drinking actually continued a slight decline.

When we began to wonder whether there was an artifact in the 1979-80 shift, we did not have far to look. Recall that by 1979 we had decided that perceptions of parental disapproval did not bear frequent repetition, since nearly all seniors felt their parents would disapprove, or strongly disapprove, of any of the drug use behaviors that were included in the question set. So we dropped these items from the 1980 questionnaire. The problem is that in prior years the questions about friends' disapproval appeared immediately following the questions about parents' disapproval. The two sets were identical, except for the reference to "parents" rather than "close friends" (see Figure 1). We suddenly realized that some respondents must have interpreted this question sequence as really asking: "Would your friends disapprove of this drug use as much as your parents would?" No doubt at least a few respondents, who otherwise would have rated their friends as disapproving, selected the "not disapprove" alternative in order to indicate a degree of difference between their parents and friends.

In addition, some respondents who would have checked "strongly disapprove" for their friends chose "disapprove" instead. This distinction does not show up in the charts, which combine the "disapprove" and "strongly disapprove" responses. However, when we examined the data more closely, we found that in every instance the percentage of seniors rating their friends as "strongly disapproving" was higher in 1980 than in 1979. The largest such shift was from 48 percent in 1979 to 60 percent in 1980 who said that their friends would "strongly disapprove" if they were to take four or five drinks nearly every day. It is noteworthy that when the 1979 seniors were asked how their parents would feel if they drank that much, fully 85 percent indicated that their parents would "strongly disapprove" and another 13 percent responded that they would "disapprove." (The complete response distributions for 1979 and 1980, respectively, are provided by Johnston, Bachman, & O'Malley, 1980b, and Bachman, Johnston, & O'Malley, 1981.)

Faced with these clear indications that the shift in questionnaire context had led to spurious trend data, we then had to decide how to deal with our unwelcome discovery. We concluded first that we would try to adjust the trend data to approximate the sort of patterns which would have emerged had the questionnaire context been consistent rather than changing in 1980. That left us with the question as to which context we preferred--the one which included items about parents or the one which did not. The answer was not altogether obvious, because we did not feel that one format involved a context effect and the other did not. Rather, we felt that in each case the questions about peer disapproval occurred in a context, and that the two different contexts had somewhat different impacts on the responses. (For a further discussion of this issue from a similar point of view, see Schuman & Presser, 1981, especially pp. 75-76.) In other words, we were not prepared to argue that one format led to valid results whereas the other did not.

In spite of these complications, we did come to the conclusion that the new format omitting the parent questions was preferable, for several reasons: First, the questions seem simpler and closer to our intended meaning when the immediate context is not the parent items. Second, the omission of the parents' items gives the questions about peer disapproval a context somewhat more comparable to items about the seniors' own disapproval of various kinds of drug use--items which, I should be sure to note, appear in a different questionnaire form. The third reason, closely related to the second, is that from 1980 onward (when the parent context was removed) there are greater similarities between seniors' own disapproval ratings and those they attribute to their friends--a similarity which we would expect, if seniors are accurate in their perceptions.

Given our preference for the later format, our problem then was to find a way of adjusting the earlier data on peer disapproval to approximate what would have been found in the absence

of the parental disapproval context. In essence, our approach was to assume that the real rate of change in peer disapproval for the 1979-1980 interval was best approximated by the rates of change in the immediately adjacent intervals. We need not review the details here (see Johnston, O'Malley, & Bachman, 1986), but it may be of interest to look briefly at the results. The adjustment factors differed appreciably across the set of items (see Table 1); large adjustments were applied to ratings about daily drinking and about smoking, whereas ratings about occasional marijuana use required virtually no adjustment. Trends from 1975 through 1986, incorporating adjustment factors, can be seen in Figures 6 and 7. The adjustments involving alcohol use (Figure 7) appear to have worked nicely, but of course the task there was quite simple--except for the spurious 1979-80 shift, there has been very little change in peer disapproval of alcohol use. I am not quite so confident about the adjustment involving regular marijuana use, since it had to be superimposed upon a fairly complex secular trend. If we had felt free to make adjustments "by eyeball" rather than by a rather simple formula, we might have come up with a slightly different set of adjustments. Perhaps more important than the exact nature of the adjustment is the fact that we do take pains in our reporting to state why it is necessary, and we describe the particular adjustment that we selected. Thus readers are cautioned that the early trend data should not be taken altogether literally.

That completes my little history of how we found this particular context effect, and what we did about it. Now I want to note some additional analyses which tie up a couple of loose ends in the story.

First let us consider my suggestion as to how this context effect operates. As I noted earlier, I assume that when faced with a sequence asking first about parental disapproval and then about peer disapproval, some respondents interpret the questions to be asking: "Would your friends disapprove of this drug use as much as your parents would?" And given that interpretation, some respondents "shade" their responses about peers in order to provide some contrast to parents (see Schuman and Presser, 1981, for a discussion of both consistency and contrast in context effects). To put the interpretation somewhat differently, we might say that the response scale is to some extent "calibrated" by first answering the parent items. In any case, a fundamental assumption is that most, if not all, seniors view their parents as being at least as disapproving of drug use as they perceive their friends to be. When I examined bivariate tables cross-classifying perceptions of parental and peer disapproval, I found exactly that sort of pattern. On the questions involving drinking, for example, only two to four percent of all respondents rated parental disapproval lower than peer disapproval, whereas about half rated parental disapproval higher--and this distinction showed up on a scale that was limited to just three categories: strongly disapprove, disapprove, and not disapprove. If someone ever undertakes to do a properly controlled experiment exploring this sort of context effect, it would be of interest to see whether expanding the response scale to five or six or seven categories would make it easier for respondents to contrast parents and peers, without "distorting" the peer ratings downward.

A second bit of additional analysis involves a more subtle aspect of context effects. It is sometimes assumed that while context effects may shift marginals, they are less likely to affect relationships among variables. Schuman and Presser (1981), however, note that question contexts can also have impacts on correlations, and the same point is made by Turner (1984). Thus it seemed worthwhile to explore whether our change in question contexts actually shifted correlations as well as marginal response distributions. Since the questions about alcohol showed the largest context effects on marginals, I concentrated on them. An obvious set of correlates were seniors reports of their own drinking behavior--the strong assumption being that these would be negatively correlated with perceived peer disapproval.

Did the change in context produce a change in correlations? The answer is a definite maybe. The question about peer disapproval of having five or more drinks once or twice every weekend, which actually showed less change in marginals than the other two alcohol questions,

generated consistently stronger correlations in 1980 through 1982, compared with 1977 and 1979. Specifically, self-reports of total alcohol use during the past year correlated about -.50 with this measure of peer disapproval during the late seventies, but the relationship strengthened to about -.56 during the early eighties. Similarly, correlations with a measure of recent heavy drinking increased from about -.38 to about -.45. These findings would seem to indicate that the later measures, with the parental disapproval context removed, are somehow better, since the expected correlations emerged more strongly. The remaining two questions about peer disapproval of daily drinking showed larger marginal shifts, but did not show any strengthening of correlations. In fact, one set of relationships seemed a bit weaker with the new context, although that may be attributable to reduced variance in the peer disapproval measure.

What should we make of these correlational findings? The general patterns of correlations were not strongly or consistently affected by the change in contexts, but neither were they entirely unaffected. If one focused just on trends in correlations involving peer disapproval of heavy weekend drinking, one might conclude that such views became more important or influential among young people, beginning in 1980. But the measures of peer disapproval of daily drinking did not show that sort of change. In the face of these mixed findings, the most appropriate conclusion about correlations may be the same sort of caution which should apply to context effects in general.

And what, then, should that level of caution be? It depends in part, of course, on the nature of the questions. Turner (1984) has suggested that questions most vulnerable to context effects are those which in some respects are amorphous or ambiguous, and involve some arbitrariness in selection of response categories (such as "strongly disapprove" versus "disapprove"). It would seem that our questions on peer disapproval fit the description of "vulnerable," and so do many other questions which form the basis for trend analyses.

Still, many of these apparently "soft" attitude measures have been shifted around without showing context effects. After examining question order effects at length, Schuman and Presser (1981) commented that "...order effects are not pervasive in a typical attitude survey" (p. 27), and "only if respondents have a need to make their answers to the second question consistent with their answers to the first will such an order effect be created" (p. 35).

Perhaps the fact that such effects often do not occur lulls us into a false sense of complacency. Schuman and Presser (1981) conclude that "In practice, survey research proceeds as though order effects were nonexistent or at least a trivial matter" (p. 74). They feel this convenient assumption must be challenged: "Question-order effects ... occur with sufficient frequency and are sufficiently large in magnitude to compete with substantive explanations where an item produces different results in different surveys" (p. 74).

Clearly, we have just seen a set of context effects which were indeed large enough to masquerade as substantive findings. My colleagues and I have learned (or relearned) at least two lessons from this experience: First, questions always appear in some context, and one cannot hope to make all contexts the same or comparable. Therefore, second, it is wise not to change contexts when doing trend analyses. In practice, that second lesson has made us increasingly conservative about making changes in our questionnaires from year to year. After all, we'd like to increase the odds that our next unexpected discoveries will be both "valuable" and "agreeable" things, and thus more fully fit the definition of serendipity.

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TABLE 1

Trends in Proportion of Friends Disapproving of Drug Use

Q. How do you think your close friends feel (or would feel) about you . . .	Adjustment Factor	Percentage saying friends disapprove[a] Class of 1975[b]	Class of 1976	Class of 1977[b]	Class of 1978	Class of 1979[b]	Class of 1980	Class of 1981	Class of 1982	Class of 1983	Class of 1984	Class of 1985	Class of 1986	'85–'86 change
Trying marijuana once or twice	(−0.5)	44.3	NA	41.8	NA	40.9	42.6	46.4	50.3	52.0	54.1	54.7	56.7	+2.0
Smoking marijuana occasionally	(+0.8)	54.8	NA	49.0	NA	48.2	50.6	55.9	57.4	59.9	62.9	64.2	64.4	+0.2
Smoking marijuana regularly	(+4.6)	75.0	NA	69.1	NA	70.2	72.0	75.0	74.7	77.6	79.2	81.0	82.3	+1.3
Trying LSD once or twice	(+2.0)	85.6	NA	86.6	NA	87.6	87.4	86.5	87.8	87.8	87.6	88.6	89.0	+0.4
Trying an amphetamine once or twice	(+2.2)	78.8	NA	80.3	NA	81.0	78.9	74.4	75.7	76.8	77.0	77.0	79.4	+2.4
Taking one or two drinks nearly every day	(+7.8)	67.2	NA	71.0	NA	71.0	70.5	79.5	71.9	71.7	73.6	75.4	75.9	+0.5
Taking four or five drinks every day	(+9.3)	89.2	NA	88.1	NA	88.5	87.9	86.4	86.6	86.0	86.1	88.2	87.4	−0.8
Having five or more drinks once or twice every weekend	(+4.7)	55.0	NA	53.4	NA	51.3	50.6	50.3	51.2	50.6	51.3	55.9	54.9	−1.0
Smoking one or more packs of cigarettes per day	(+8.3)	63.6	NA	68.3	NA	73.4	74.4	73.8	70.3	72.2	73.9	73.7	76.2	+2.5
Approx. N =		(2488)	(NA)	(2615)	(NA)	(2716)	(2766)	(3120)	(3024)	(2722)	(2721)	(2688)	(2639)	

NOTE: Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. NA indicates data not available.

[a] Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[b] These figures have been adjusted by the factors reported in the first column because of lack of comparability of question-context among administrations. (See text for discussion.)

FIGURE 1

Question Text

How do you think your CLOSE FRIENDS feel (or would feel) about YOU doing each of the following things? (Mark one circle for each line.)

	Not Disapprove	Disapprove	Strongly Disapprove
a. Smoking one or more pack of cigarettes per day	①	②	③
b. Trying marijuana (pot, grass) once or twice	①	②	③
c. Smoking marijuana occasionally	①	②	③
d. Smoking marijuana regularly	①	②	③
e. Trying LSD once or twice	①	②	③
f. Trying an amphetamine (upper, pep pill, bennie, speed) once or twice	①	②	③
g. Taking one or two drinks nearly every day	①	②	③
h. Taking four or five drinks nearly every day	①	②	③
i. Having five or more drinks once or twice each weekend	①	②	③

FIGURE 2

Trends in Disapproval of Illicit Drug Use
Seniors, Parents, and Peers
1975-1980

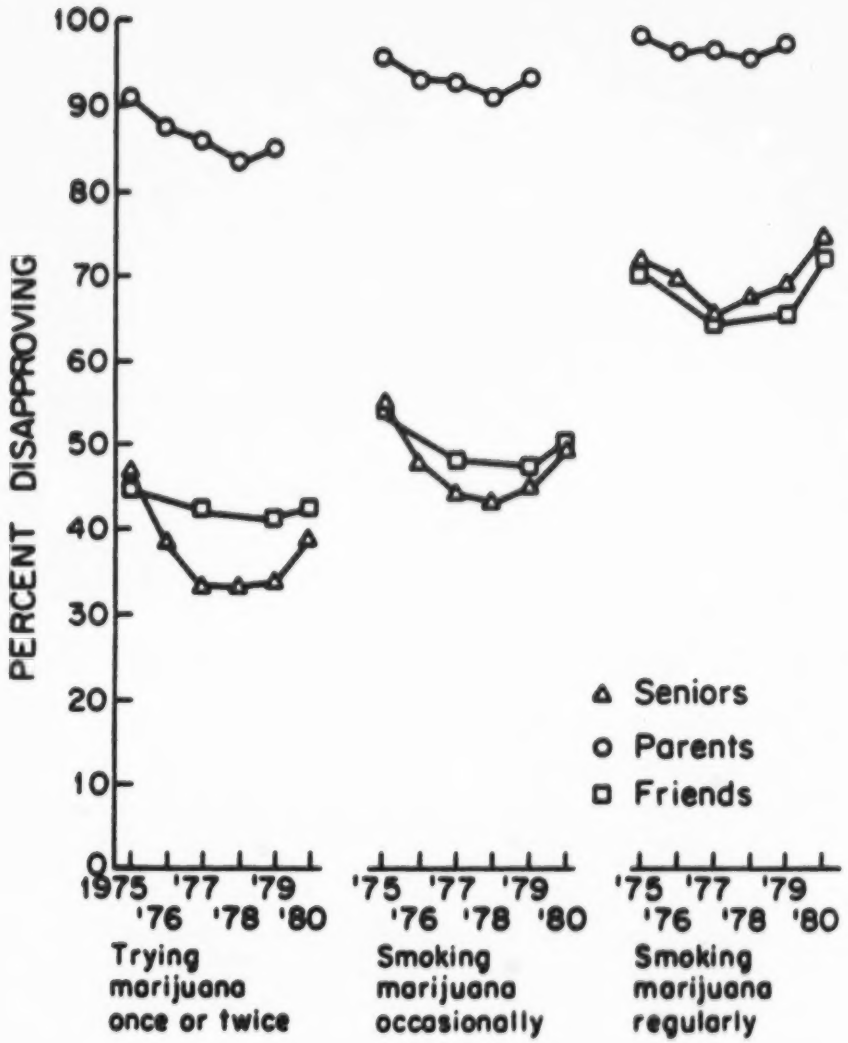


FIGURE 3

Trends in Disapproval of Licit Drug Use
Seniors, Parents, and Peers
1975-1980

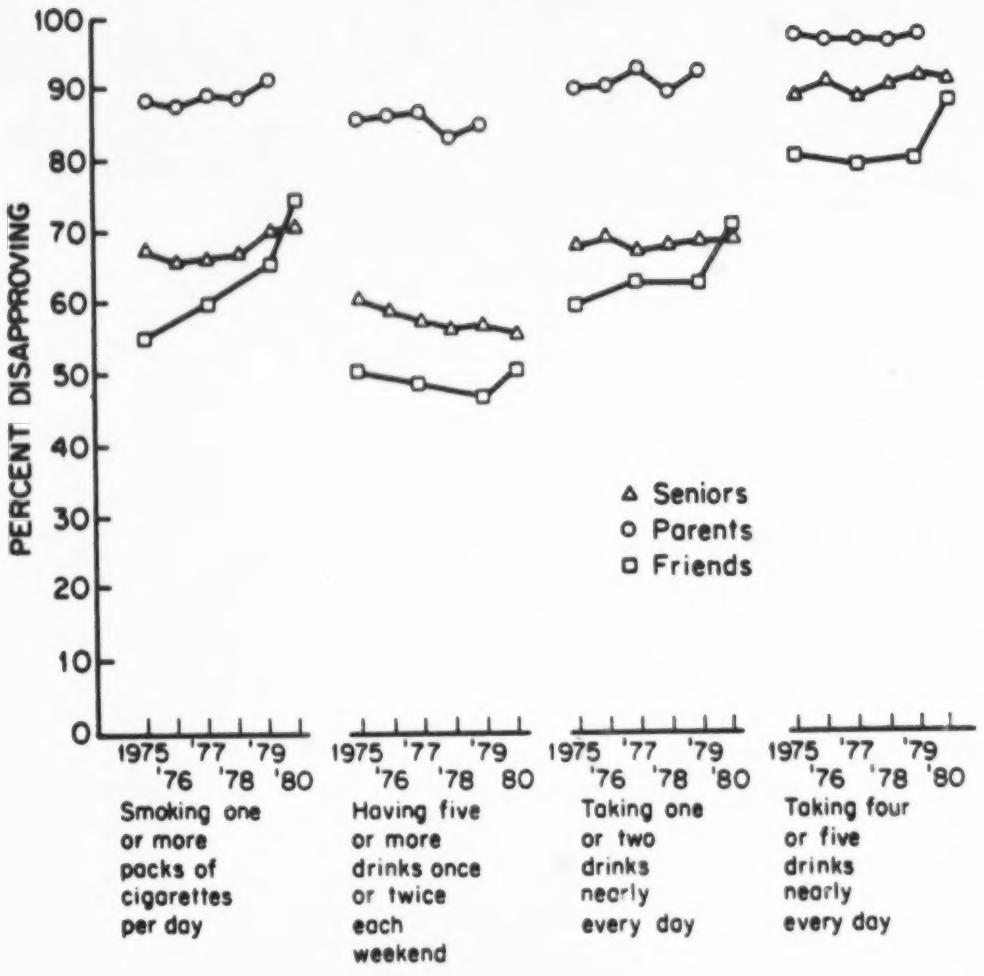


FIGURE 4

Trends in Disapproval of Illicit Drug Use
Seniors, Parents, and Peers
1975-1981

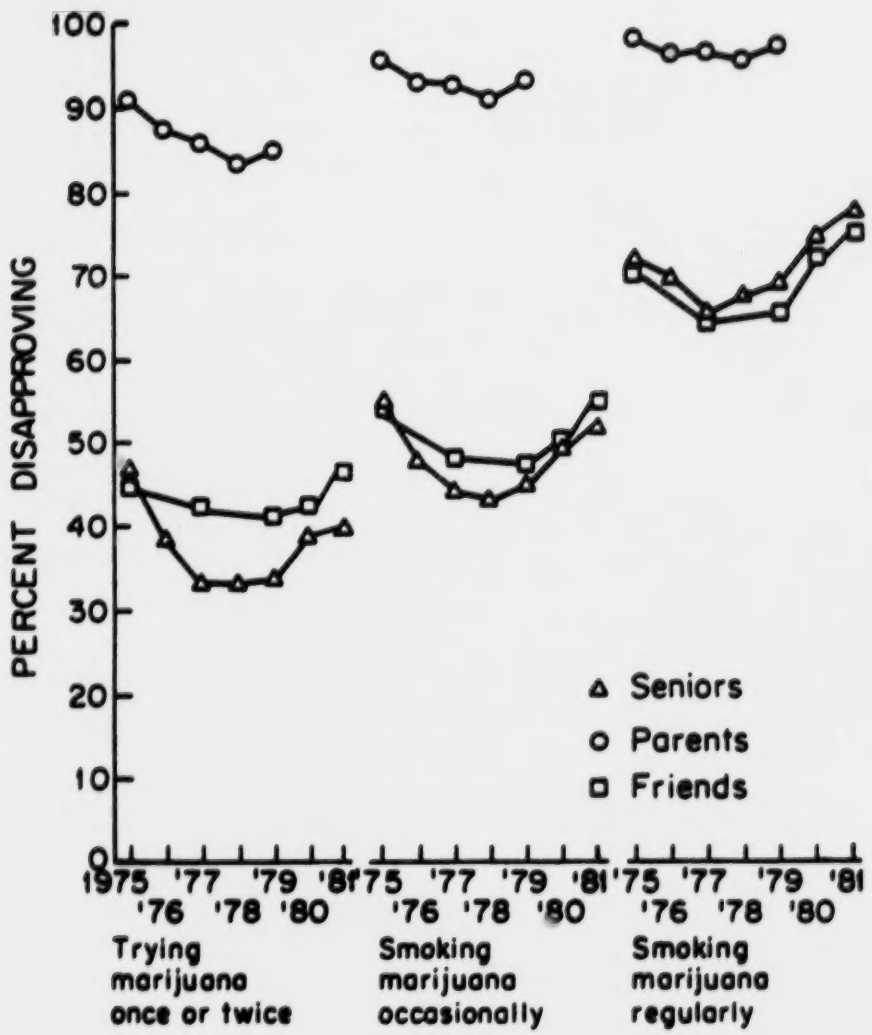


FIGURE 5

Trends in Disapproval of Licit Drug Use
Seniors, Parents, and Peers
1975-1981

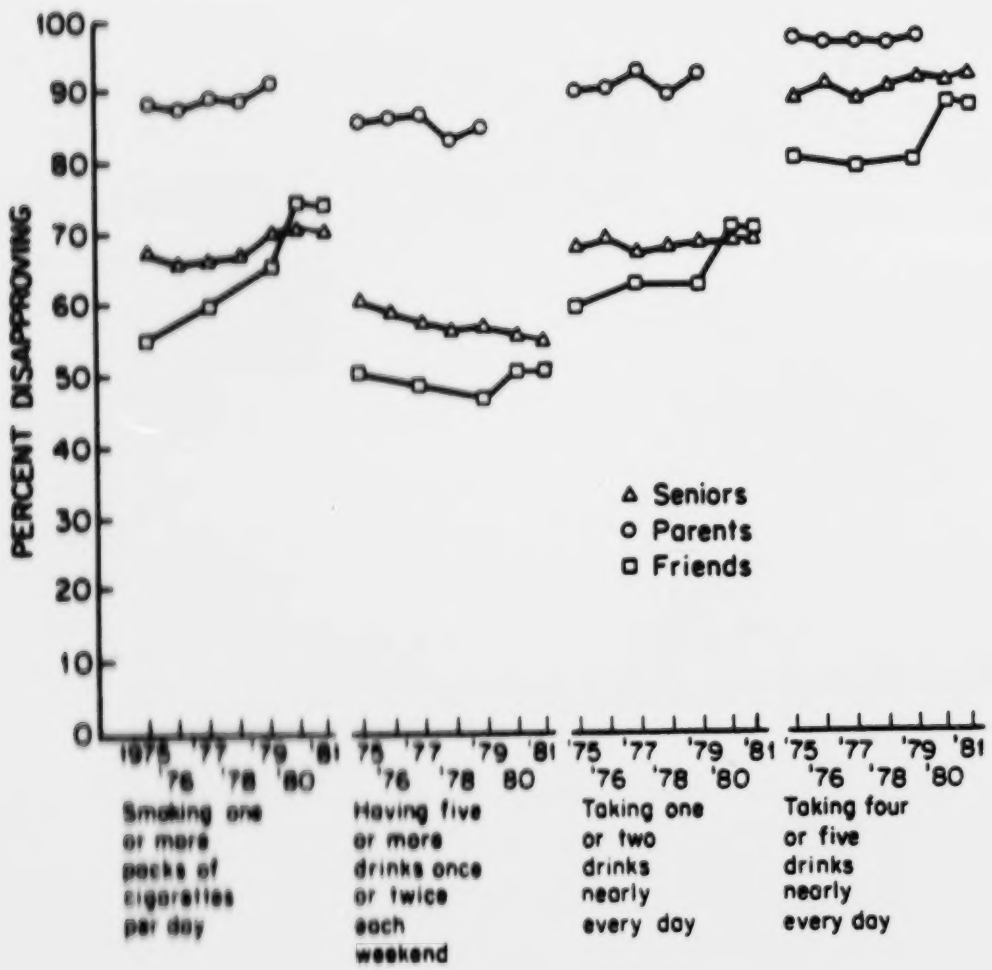
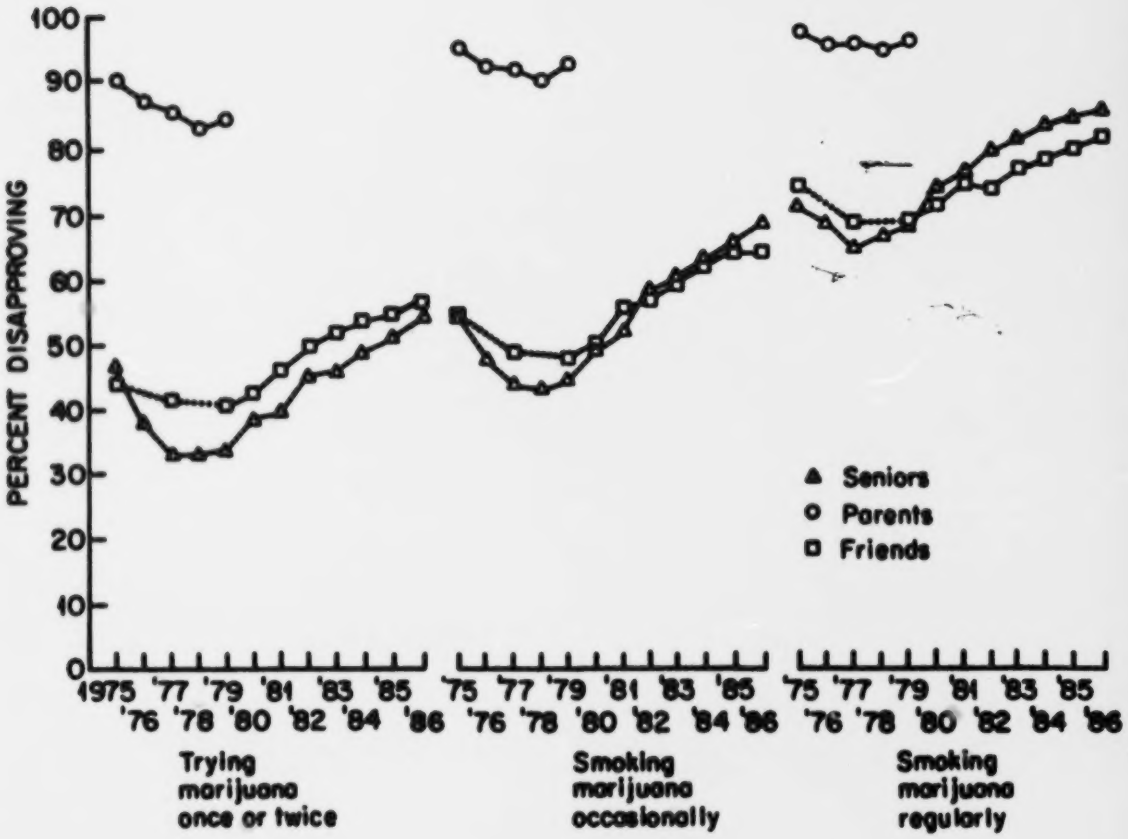


FIGURE 6

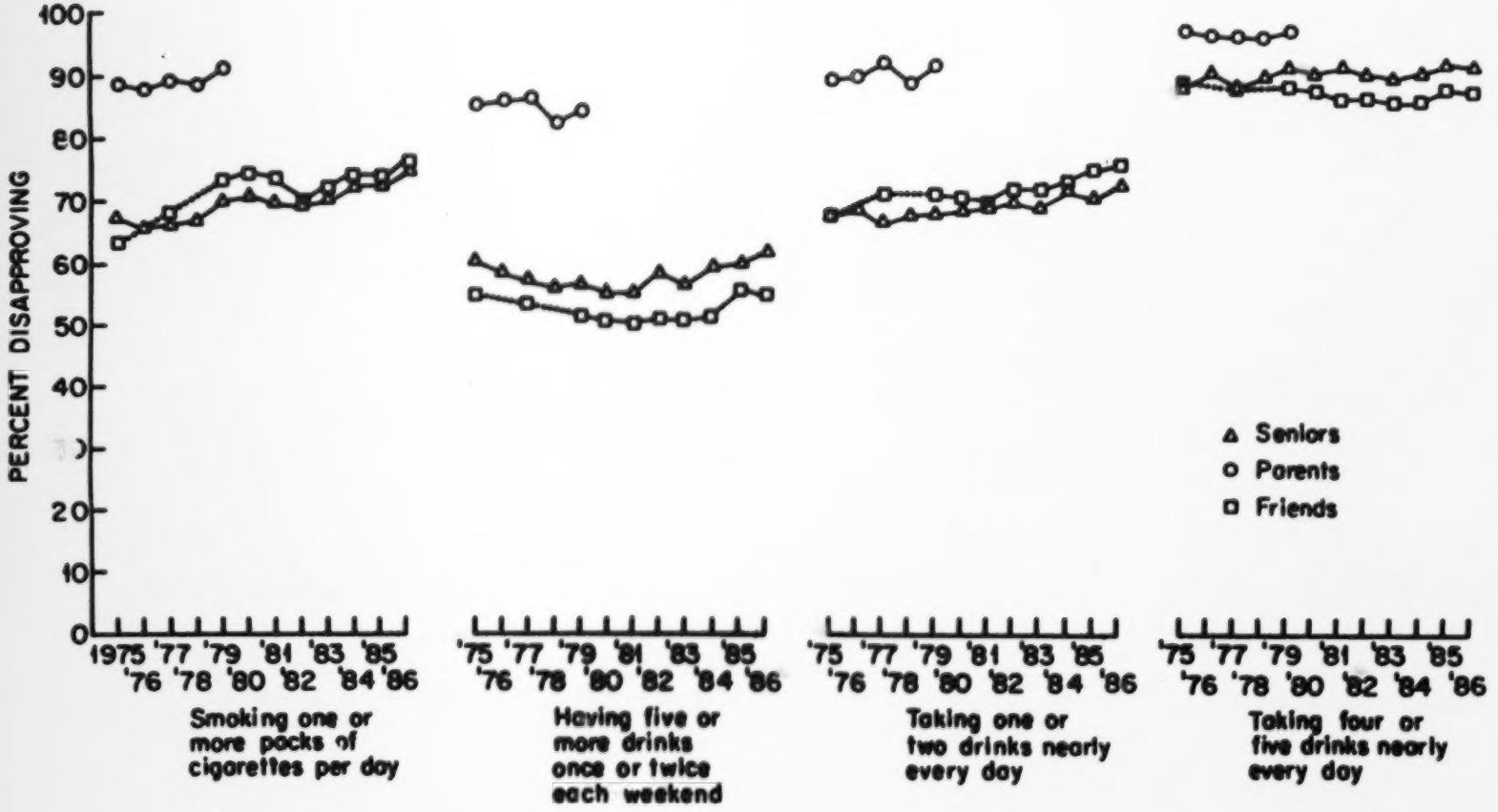
Trends in Disapproval of Illicit Drug Use
Seniors, Parents, and Peers
1975-1986



NOTE: Points connected by dotted lines have been adjusted because of lack of comparability of question-context among administrations. (See text for discussion.)

FIGURE 7

Trends in Disapproval of Licit Drug Use
Seniors, Parents, and Peers
1975-1986



NOTE: Points connected by dotted lines have been adjusted because of lack of comparability of question-context among administrations. (See text for discussion.)